



VALIDITY AND RELIABILITY OF A WOUND SUTURING TRAINING TOOL PERCEPTION QUESTIONNAIRE IN NURSING EDUCATION

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ABSTRACT

The use of simulation-based training tools such as suture pads is essential in improving clinical skills among nursing students and professionals. To evaluate their effectiveness, a valid and reliable assessment instrument is required. This study aimed to examine the validity and reliability of a questionnaire designed to assess nurses' perceptions of a wound suturing training tool (suture pad) that simulates human skin characteristics. A descriptive quantitative study was conducted involving 100 nurses, with 50 participants from RSUD Ahmad Yani Metro and 50 from RS Mutiara Hati Pringsewu. The questionnaire consisted of 16 items across four domains: physical and sensory aspects, ease and comfort of use, effectiveness and benefits, and general satisfaction. Validity was tested using Pearson Product-Moment correlation with a significance level of 5% ($R_{table} = 0.1946$), while reliability was measured using Cronbach's Alpha. The analysis results showed that 14 out of 16 questionnaire items had R calculated values greater than the R_{table} and significance values less than 0.05, indicating that they were valid. Two items (numbers 14 and 15) were found to be invalid as they did not meet these criteria. The Cronbach's Alpha value demonstrated a high level of internal consistency, indicating that the questionnaire had good reliability. The developed questionnaire is both valid and reliable for measuring perceptions of suture pad usage in clinical skill training. It can serve as an effective evaluation tool to support the development and refinement of simulation-based learning in nursing education.

Keywords: nursing skills; questionnaire; reliability; suture pad; validity

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INTRODUCTION

Suturing skills are one of the fundamental competencies that nursing students must acquire. This procedure not only requires theoretical knowledge but also strong psychomotor skills to ensure optimal wound healing and prevent infection-related complications. Educational institutions need to provide adequate training tools to support the effective learning of this skill (Kang et al., 2019; Randhawa et al., 2024). The use of wound suturing training tools has become a popular alternative for learning in health education institutions. These tools are designed to mimic the texture and elasticity of human skin, providing a realistic training experience that allows students to gain practical exposure similar to clinical conditions before entering real clinical settings (Faris et al., 2022; Regula & Yag-Howard, 2015).

The effectiveness of using suturing training tools can be assessed not only through students' skill performance but also through users' perceptions of the tools. These perceptions include comfort, resemblance to real skin, material durability, and ease of use. Therefore, a valid and reliable measurement instrument in the form of a questionnaire is needed to systematically and objectively evaluate these perceptions (Alves de Oliveira et al., 2024; Szabelski & Karpiński, 2024).

Validity and reliability are two crucial aspects in the development of research instruments. Validity reflects the extent to which an instrument accurately measures what it is intended to measure, while reliability indicates the consistency of the measurement results under varying conditions. Without validation and reliability testing, the data obtained from a questionnaire may be misleading and result in inaccurate interpretations (Gusman, 2012; Hilton & Monaghan, 2018).

There is a lack of studies specifically examining the validity and reliability of questionnaires used to assess the use of wound suturing training tools. Most existing questionnaires are adaptations or have not undergone a proper trial process. This gap highlights the need for further research, considering the important role of training tools in supporting the mastery of nursing students' clinical skills. Validity and reliability testing are essential to ensure that each item in the questionnaire aligns appropriately with the theoretical constructs and yields stable, consistent results when used for measurement (Kuzu, 2022; Szarmach et al., 2017). This study is based on the need for a valid and reliable instrument to evaluate the effectiveness of clinical training tools, particularly in the context of nursing education. With a valid and reliable questionnaire, the data collected will be more representative and useful for refining training tools and improving the quality of clinical skills education. This study aims to develop and test the validity and reliability of a questionnaire designed to evaluate nursing students' perceptions of using a suturing training pad as a tool for clinical skills learning.

METHOD

This study employed a pilot study design, which serves as a preliminary investigation using a descriptive-correlational approach to assess and evaluate the validity and reliability of the instrument, while also identifying potential measurement errors (Kunselman, 2024). The study population consisted of 100 nurses working in hospital settings. Respondents were evenly distributed, with 50 nurses recruited from RSUD Ahmad Yani Metro and 50 nurses from RS Mutiara Hati Pringsewu. The sampling technique used was purposive sampling, based on predefined inclusion criteria: nurses who had prior experience in suturing human skin, held a minimum of a diploma in nursing (D3), were above 20 years of age, and had at least two years of clinical work experience in a hospital. These selection criteria were intended to ensure that respondents possessed relevant experience and competence in evaluating the use of a wound suturing training tool, thereby enhancing the accuracy and credibility of the data collected through the questionnaire.

Questionnaire

The questionnaire was developed as a measurement tool to evaluate users' perceptions of a wound suturing training device (suture pad) within the context of clinical skills learning. The development process was conducted systematically in several stages. The first stage involved defining the purpose of measurement, namely identifying key dimensions related to the use of the suture pad in suturing practice. The next stage included a literature review to identify commonly evaluated indicators in clinical simulation tools, followed by item generation, instrument validation, and field testing. Based on this process, a conceptual framework was established consisting of four main dimensions: (1) Physical and Sensory Aspects, (2) Ease and Comfort of Use, (3) Effectiveness and Benefits of the Suture Pad, and (4) General Perception and Satisfaction. Each dimension was operationalized into representative and relevant statements that reflected user experience.

The final questionnaire comprised 16 statements, each measured using a 4-point Likert scale: 1 (Strongly Disagree), 2 (Disagree), 3 (Agree), and 4 (Strongly Agree). This scale was chosen to capture respondents' attitudes more precisely and to avoid neutral or ambiguous responses. The total score ranged from 16 to 64. Based on this score range, three interpretation categories were defined: a score of 16–31 indicated that the tool is not recommended for use; 32–47 suggested that the tool is recommended but requires further evaluation; and 48–64 indicated that the tool is highly recommended for continued use in clinical training. The final stage in questionnaire development

involved content validation through expert consultation in nursing and health education, as well as a pilot test with eligible participants. The outcomes of these stages were used to determine whether the questionnaire items could accurately and consistently measure perceptions of the wound suturing training tool.

Data analysis

The data analysis in this study focused on assessing the validity and reliability of the developed questionnaire. To evaluate construct validity, Pearson Product-Moment correlation was applied to determine the relationship between individual item scores and the total score of the instrument. An item was deemed valid if it met two criteria: a correlation coefficient (r-value) greater than 0.1946 and a significance level (p-value) less than 0.05, indicating a statistically significant relationship (Puth et al., 2014). To measure the internal consistency of the questionnaire, Cronbach's Alpha coefficient was calculated. A Cronbach's Alpha value equal to or above 0.70 was considered acceptable, suggesting good reliability and consistency among the items in the instrument (Taber, 2018). All statistical analyses were performed using IBM SPSS Statistics. This software facilitated the computation of descriptive statistics, item-total correlations, and internal consistency measures to ensure the robustness of the instrument. These analyses ensured that the questionnaire was both a valid and reliable tool for evaluating users' perceptions regarding the use of a suture training pad in clinical skill development (Rahman & Muktadir, 2021). This study received ethical approval from the Ethics Committee of the Faculty of Health, Aisyah University, Pringsewu, Indonesia (Reference No. 600/UAP.OT/KEP/EC/2025). All participants provided written informed consent before participation in the study.

RESULT

Characteristics of the Participants

The demographic characteristics of the participants involved in the pilot study are summarized in Table 1. Based on gender, 58% of the respondents were male, while 42% were female. In terms of age distribution, the majority (60%) were between 18–33 years old, and the remaining 40% were aged 34–49 years. Regarding educational background, 50% of the participants held a Diploma in Nursing (D3), 47% were professional nurses (Ners), and 3% held a Master's degree. For length of service, most respondents (78%) had 1–10 years of experience working in hospitals, while 22% had 11–20 years of experience. No participants had over 20 years of service. These characteristics provide an overview of the sample population, indicating that most respondents were relatively young and early-to-mid-career professionals with a diploma or professional nursing degree.

Table 1.
Description of Respondents

Variable	f	%
Gender		
Man	58	58.0
Woman	42	42.0
Age		
18-33	60	60.0
34-49	40	40.0
Education		
D3	50	50.0
Ners	47	47.00
Master	3	3.0
length of service		
1-10 tahun	78	78.0
11-20 tahun	22	22.0
21-30 tahun	0	0.0

Validity Test Results

The validity analysis of the questionnaire items was conducted using the Pearson Product-Moment correlation test, with a significance level set at $p < 0.05$ and a critical r value (r table) of 0.1946.

This analysis aimed to evaluate the extent to which each item accurately represented the intended construct within the instrument. The results of this analysis are presented in Table 2. Out of the 16 items tested, 14 demonstrated statistically significant correlation coefficients (r calculated > 0.1946 , $p < 0.05$), indicating that these items were valid and capable of effectively measuring various aspects of user perception regarding the suture pad. These valid items were distributed across four dimensions: Physical and Sensory Aspects, Ease and Comfort of Use, Effectiveness and Benefits of the Suture Pad, and General Perception and Satisfaction. However, two items (items 14 and 15), both categorized under the General Perception and Satisfaction aspect, did not meet the validity threshold. These items had correlation coefficients lower than the r table value and significance values above 0.05, suggesting that they may not adequately represent the measured construct and may require revision or elimination in future iterations of the questionnaire. Overall, the results support the content and construct validity of the instrument, particularly within the dimensions related to physical realism, usability, and perceived learning outcomes of using the suture pad.

Table 2.

Recapitulation of Wound Suturing Training Tool Perception Questionnaire of Validity Test Results

No	Questionnaire indicators	Mean	SD	Signifikasi <0.05 (5%)	R Calculated	R Table	Conclusion
Physical and Sensory Aspects							
1.	The surface of this suture pad feels similar to human skin	3.7200	0.45126	0,00	0,492	0,1946	Valid
2.	The elasticity of the silicone material on the suture pad feels realistic when sutured, like human skin.	3.6500	0.50000	0,00	0,438	0,1946	Valid
3.	The thickness of the suture pad corresponds to the thickness of human skin tissue.	3.7900	0.40936	0,00	0,521	0,1946	Valid
4.	This suture pad provides resistance similar to that of human skin during the suturing process.	3.8400	0.39492	0,00	0,429	0,1946	Valid
5.	The wound shape on the suture pad resembles the types of wounds commonly encountered on human skin in hospitals.	3.8000	0.40202	0,04	0,518	0,1946	Valid
6.	The texture of the suture pad visually resembles real human skin.	3.6400	0.48242	0,03	0,396	0,1946	Valid
Ease and Comfort of Use Aspects							
7.	The suture pad is easy to position and use for wound suturing practice.	3.8300	0.37753	0,01	0,455	0,1946	Valid
8.	The suture pad is stable and does not shift easily during use.	3.6300	0.64597	0,04	0,430	0,1946	Valid
9.	The size of the suture pad is appropriate for practicing suturing skills.	3.8600	0.34874	0,00	0,474	0,1946	Valid
10.	The suture pad is easy to clean and maintain after use.	3.6100	0.49021	0,02	0,317	0,1946	Valid
Effectiveness and Benefits Aspects of the Suture Pad							
11.	The suture pad helps me better understand wound suturing techniques.	3.8000	0.40202	0,01	0,226	0,1946	Valid
12.	The suture pad introduces me to a variety of different wound types.	3.6800	0.54828	0,00	0,481	0,1946	Valid
13.	The suture pad enhances my confidence in performing wound suturing procedures	3.6100	0.49021	0,05	0,280	0,1946	Valid
General Perception and Satisfaction Aspects							
14.	Overall, I am satisfied with this suture pad.	43.030	25.91846	0,17	0,138	0,1946	Invalid

No	Questionnaire indicators	Mean	SD	Signifikasi <0.05 (5%)	R Calculated	R Table	Conclusion
15.	I would recommend this suture pad to colleagues or students to improve their wound suturing skills.	3.7800	0.41633	0,18	0,135	0,1946	Invalid
16.	This suture pad is better than conventional suturing practice methods (e.g., using fabric, sponges, or mannequins).	3.7500	0.43519	0,00	0,517	0,1946	Valid

Reliability Test Result

The reliability analysis of the questionnaire on the use of wound suturing training tools was conducted to assess the internal consistency of the instrument as presented in Table 3. The instrument consisted of 16 items and yielded a Cronbach’s Alpha value of 0.745, indicating an acceptable level of reliability. This suggests that the items within the questionnaire are consistently measuring the same underlying construct and that the instrument is dependable for evaluating users’ perceptions regarding the suture pad. A Cronbach’s Alpha above 0.7 is generally considered adequate in social science research, supporting the use of this questionnaire in further studies.

Table 3.

No	Variable	Number Of Items	Cronbach’s Alpha	Correlation Item
1	Wound Suturing Training Tool Perception Questionnaire	16	0,745	Reliable

DISCUSSION

This study employed a questionnaire as a data collection instrument to evaluate nursing students’ perceptions of using a wound suturing training tool that resembles human skin. The instrument was developed based on four key aspects: physical and sensory characteristics, ease and comfort of use, effectiveness and benefits, and general perception and satisfaction. A total of 16 items were designed to explore respondents’ experiences and assessments after using the training tool. A validity test was conducted to determine the extent to which each item in the questionnaire could accurately measure the intended construct. The analysis results showed that 14 out of 16 items had correlation coefficients (R calculated) greater than the critical value (R table = 0.1946), with a significance level of < 0.05. This indicates that the majority of items in the questionnaire demonstrated good validity and effectively measured relevant aspects of suture pad perception. However, two items, numbers 14 and 15 were found to be invalid due to correlation coefficients below the threshold and significance values above 0.05. This suggests that these items did not contribute strongly to measuring the intended construct, indicating the need for editorial revision or the development of new items for that aspect (Ahmed & Ishtiaq, 2021; Karnia, 2024)

The reliability analysis yielded a Cronbach’s Alpha value that demonstrated a high level of internal consistency within the questionnaire. A strong reliability score indicates that the instrument can be used consistently across similar measurements, whether among the same or different respondent groups. This questionnaire is considered a reliable tool for evaluating the effectiveness of clinical skills learning media, particularly in the context of wound suturing. The descriptive analysis of mean scores indicated that respondents gave positive evaluations regarding the use of the suture pad as a wound suturing training tool. This positive perception was reflected in high scores on several questionnaire items related to the physical characteristics of the suture pad, such as its thickness, resistance (tactile feedback during suturing), and the elasticity of the material. These three characteristics were considered essential because they resemble the properties of human skin, thereby offering a more realistic practice experience for nursing students (Antonopoulos et al., 2023; Gonzalez-Navarro et al., 2021; Khantasa-ard, 2024).

The appropriate thickness allowed students to feel the depth of needle insertion proportionally, while the resistance of the material provided tactile feedback similar to that of real tissue. Elasticity was also an important factor, enabling respondents to practice pulling and tightening sutures effectively, as if they were suturing real human skin. This demonstrates that the suture pad replicates not only the visual appearance but also the functional aspects of human skin (Baillie et al., 2020; Chao et al., 2022; Prasomsin et al., 2021).

The ease of use during practice emerged as a significant aspect that received high average scores from respondents, highlighting the suture pad's practicality as a training tool. This dimension includes several key elements, such as how easily the pad can be held, stabilized on a surface, and positioned during wound suturing practice. A training aid that remains steady and does not shift during procedures contributes greatly to the accuracy and smoothness of the student's technique. This is especially important for nursing students who are still developing hand coordination and procedural confidence (Halim et al., 2024; Ospanov, 2019; Rachmanio et al., 2025). Participants perceived the suture pad as easy to use, suggesting that the design and structure were well-adapted for educational purposes. Stability is crucial, as constant repositioning of the tool can disrupt learning, frustrate users, and interfere with skill acquisition. When a tool is stable, students can focus more on mastering suturing techniques rather than managing the tool itself (Byrne & Aly, 2019; Dennis et al., 2016; Oberhaus & McFadden, 2023; S. N. Sumardi & Must, 2025)

User-friendly educational tools like suture pad play an important role in fostering a conducive learning environment. They reduce cognitive and emotional burdens often associated with practicing complex clinical procedures. By minimizing technical distractions and allowing students to concentrate on the core aspects of the task, such tools help optimize the learning process. Ease of use also builds confidence, especially for beginners. Students who find the tool intuitive and manageable are more likely to practice repeatedly, leading to improved muscle memory and greater self-assurance in real clinical settings. This repeated practice is essential for achieving proficiency in wound closure techniques, which are critical in both emergency and surgical nursing care (Li et al., 2023; Sulistiyowati & Supratman, 2024; S. Sumardi et al., 2023; Suwardianto & Astuti, 2020). Most items were shown to be valid and reliable, the identification of two invalid items highlights the need for further evaluation of the general perception and satisfaction aspect. This is important to ensure that the instrument not only captures physical and functional characteristics but also reflects users' overall impressions and intentions to recommend the tool to others. Editorial improvement, clarification of meaning, or contextual adjustment may be necessary steps to enhance the overall quality of the instrument

CONCLUSION

This study concludes that the wound suturing training pad, which mimics the texture, elasticity, and thickness of human skin, is perceived positively by nursing students and proves to be a valid and reliable learning tool. The majority of questionnaire items showed strong validity and internal consistency, indicating that the instrument effectively captures user perceptions across physical, functional, and educational aspects. The suture pad not only enhances understanding of suturing techniques but also increases user confidence and provides realistic practice experiences. Although a few items require refinement to improve the overall measurement quality, the training pad shows great potential as a valuable simulation media in clinical skills education.

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